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# FOREST SERVICE

R-INT
REPORTS
Priest River Annual

## 1957 ANNUAL REPORT

## PRIEST RIVER EXPERIMENTAL FOREST

By James W. Hanover
Superintendent

INTERMOUNTAIN FOREST AND RANGE EXPERIMENT STATION

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REPORTS
General

# 1957 ANNUAL REPORT

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By

James W. Hanover, Superintendent

## INTRODUCTION

On January 31, 1912, Donald R. Brewster, Forest Assistant, In Charge Priest River Experiment Station, wrote an annual report just 4 months after a horse-drawn wagon with men and materials established the Priest River Experimental Forest. In his report Mr. Brewster stated under the heading "Recommendations", that "opportunities for investigative work are so manifold at the station that one man can scarcely begin to do the work that should be done. The work is so important and the permanent investment is so large that precautions should be taken to prevent interruptions in continuity and the fullest advantage should be taken of the equipment of the station." Then he added, "in order to do this, another technical man should be assigned to assist the man in charge." !

After 46 years of continuous operation it is gratifying that Mr. Brewster's recommendations have not been overlooked. The years have brought about a shifting of emphasis from certain activities to others as is apparent in this and other recent reports. However, today as in 1911, the Priest River Experimental Forest still serves as a field laboratory and demonstration area for all interested groups and individuals.

The following report covers the 1957 year of operation.

## RESEARCH ACTIVITIES

### Forest Management Research

#### Plot Remeasurement

The following permanent sample plots on the Priest River Experimental Forest were remeasured during 1957:

Ponderosa Pine Brushfield plantation plots 174, 175
Lodgepole pine X jack pine hybrid plots 199 and 202
Prolific white pine seed tree plot 76

## Progeny Tests of White Pine

The third outplantings of the progeny of white pine parents selected for rust resistance and vigor were made on May 21 and 22. On July 31 and August 1 all the outplantings were staked.

# Forest Disease Research

## Microclimate Studies

A study of microclimate on the experimental forest was made in 1957 to determine the relationship of blister rust infection of white pine to microclimate. Observations of maximum and minimum temperatures were made at 2 feet above the ground under various classes of topography and vegetation on 156 sites on 3 small areas of the experimental forest. On many of the sites continuous records of temperature and humidity were maintained. Data obtained will be used to study chances of occurrence of favorable combinations of temperature and moisture for development of white pine blister rust, determined by analysis of weather data from long period weather stations, on nearby areas from a knowledge of topography and vegetation.

In 1958 further studies will be made on the importance of dew as a source of moisture for intensification and spread of the rust.

## Pole Blight Investigations

The Pole Blight Investigations Steering Committee held its two-day meeting on the forest on May 7 and 8. Eighteen persons attended representing the Intermountain Station, University of Idaho, Canada, Region 1, and the Kaniksu National Forest.

Studies to determine the cause of pole blight required some use of the experimental forest this year. The formation of a soils survey crew necessitated several weeks of planning, crew training, and laboratory work on the experimental forest before leaving for other forests in the Inland Empire.

Soil moisture experiments established in 1955 and 1956 were maintained.

# Fire Research

## Skyfire Project

The training school for Skyfire lookouts was again held at the Priest River Experimental Forest, June 25, 26, and 27. About 50 people representing 22 lookouts and teaching staff met in training sessions to familiarize lookouts and their wives with the duties and procedures associated with Project Skyfire.

Cloud seeding generators and the mobile meteorological laboratory were operated in the vicinity of Lolo Pass on the Idaho-Montana border this summer.

Gisborne lookout was again one of the 22 skyfire stations.

Logging Slash Inflammability

All of the logging slash inflammability plots were weeded and sprayed during the past summer. A blister rust tanker crew with the help of one fire field assistant accomplished the treatment in one day.

The chipped slash plots were burned although, as expected, not much spread occurred in this material.

A logging slash review team composed of personnel from Region 2 and the Rocky Mountain station spent September 9 viewing demonstrations on the experimental forest and adjacent areas with members of the Intermountain Station.

Fire Weather Measurement

The usual daily fire weather measurements were made again this summer. In addition to three daily weights on sets of fuel sticks and slats, twice weekly measurements were taken on a number of fuel moisture sticks as a quality test.

An experiment was initiated to determine whether appreciable leaching occurs in the fuel moisture sticks from May to October and if so, how much and at what period it is greatest. Results have not been summarized.

Daily weighing of the large log samples and weighing of all the logs every ten days were continued. The old large logs were replaced at the end of the season. New logs were obtained on the Kaniksu forest and from a pole yard in Sandpoint. These logs were bucked, peeled, weighed, and oven dry weights obtained. Straps for handling were installed and the logs were put in place for the winter.

Results of daily weight measurements for the sticks, slats, and logs were plotted every day on large graphs for display in the fire office. This proved to be very helpful in showing variations between materials and treatments.

A new standard fire weather station was built just south of the clear-cut station. Daily fire weather observations are now made at the new station. All other tests will be continued in the larger clear-cut station.

Many new pieces of equipment were tested during the year including a wind counter, fan psychrometer, hardboard scalehouse, and portable fire weather station.

## Weather, Streamflow, and Snow Observations

### Weather

1957 Started out with a severe cold spell which caused the pool in the well at Benton Dam to freeze for the first time in many years. From January 14 to 30 the temperature did not rise above 23°. One day the high was 5°. On 13 of the 17 days, minimum temperatures were well below zero, reaching -21°, -23°, and -27° twice.

Otherwise, 1957 weather approached normal. Total precipitation was 31.69 inches, 1.28 inches above normal. Average maximum temperature was 55.6°, 0.8° below normal; average minimum temperature was 31.1°, 0.3° above normal.

### Streamflow

Streamflow measurements at Benton Dam were continued. Total runoff for the 1956-1957 water year was 14.37 inches compared with total headquarters precipitation (October to September) of 29.38 inches. Runoff was 1.16 inches below normal; precipitation, 4.01 inches below normal.

### Snow Surveys

In cooperation with the Soil Conservation Service the monthly snow measurements were made at Benton Spring and Benton Meadow snow courses from January to May. Table 1 summarizes these data.

Table 1.--Snow depth and water content (inches) 1957, Priest River Experimental Forest snow courses

| | | Jan. | Feb. | Mar. | Apr. | May |
|---|---|---|---|---|---|---|
| Benton Spring | Depth | 24.00 | 35.0 | 50.0 | 53.1 | 33.8 |
| | Water content | 6.8 | 10.5 | 14.7 | 17.8 | 14.3 |
| Benton Meadow | Depth | 7.0 | 16.2 | 19.7 | 6.0 | 0 |
| | Water content | 1.1 | 3.0 | 5.3 | 1.7 | 0 |

Snow Depth and water content for both courses was below normal for each month.

Soil moisture and Benton springflow measurements were made each month during the year but to date no calibration curves are available for summarizing these data.

## ADMINISTRATIVE ACTIVITIES

### Personnel

#### Personnel in Residence

The following people were either assigned to the Experimental Forest or made it their headquarters for a period.

| Name | Position |
|---|---|
| Hanover, J. W. and family | Superintendent |
| Chidsey, Peter | Fire Assistant |
| Gove, W. R. | " " |
| Ross, R. L. | " " |
| Farnsworth, G. | Meteorology Assistant |
| Flesher, W. H. | Laborer |
| Pavell, D. P. | Forest Management Assistant |
| Going, Eva | Cook |
| Roberson, V. L. | Cook |
| Schuetze, E. | Cook |
| Whipple, I. | Cook |
| Lloyd, M. G. | Meteorologist |
| Stage, A. R. and family | Forest Management Res.,IERC |
| Graham, D. P. and family | Forest Disease Res., IERC |
| Copeland, O. L. and family | Soil Scientist, IERC |
| Hardy, C. E. and family | Div. Fire Res., IFRES |
| Benson, E. T. and family | Secretary of Agriculture |

#### Secretary of Agriculture's Visit

The experimental forest had the unique and pleasant experience of being "home" for Secretary of Agriculture Ezra Taft Benson and his family for six weeks during 1957. The distinguished guests occupied the Lodge from July 2 to August 13. Secretary Benson's summer at the forest enabled him to become familiar with Forest Service programs by means of extensive and local trips scheduled for him. The Secretary spent many hours relaxing and enjoying the station's scenery and facilities.

#### C. A. Wellner

Of no little significance to the Priest River Experimental Forest was the announcement that C. A. Wellner, Leader, Inland Empire Research Center, had accepted the Forest Management Research Chief job in Ogden. For about 25 years Mr. Wellner has been closely associated with the experimental forest and responsible for much of its past progress and future plans. In his new position he will no longer have supervision of the forest but his past efforts and interest in it will be of real benefit.

## Cooperation

As in past years, the Falls district, the Blister Rust Headquarters, and other units of the Kaniksu National Forest were extremely cooperative in many experimental forest functions.

## Inspections

Several inspection parties brought many notable visitors to the forest in 1957. Following is a summary of these visits:

General Integrating Inspection--August 3-5

| | |
|---|---|
| R. B. McKennan | W.O. |
| C. L. Tebbe | R1 |
| Merle Lundrigan | R1 |
| C. A. Wellner | IERC |
| J. S. Barrows | Div. F.R. |
| Clare Hendee | W.O. |
| R. W. Bailey | Int. Sta. |

General Integrating Inspection--Station--August 8-9

| | |
|---|---|
| G. Craddock | Int. Sta. |

General Functional-Forest Management Research--August 31, Sept. 1

| | |
|---|---|
| C. Ostrom | W.O. |

General Functional-Forest Disease Research--June 18-20

| | |
|---|---|
| R. J. Hansbrough | W.O. |

General Functional-Range Management Research--August 16

| | |
|---|---|
| Ken Parker | W.O. |
| L. Ellison | Int. Sta. |
| W. Fallis | R1 |
| R. Casebeer | Idaho Fish and Game |
| W. Mueggler | IERC |

## Visitors and Meetings

Many others visited the forest in 1957 from Regional Foresters to local loggers, but to mention all names would require a Traveler's Register insertion. Mention will be made of various groups using the forest this past year:

| | |
|---|---|
| Montana State University dendrology class | Feb. 9 |
| Forestry School Deans Tour | July 19 |
| Priest River Girl Scouts | June 18 |
| Inland Empire Forest Research Advisory Committee Meeting | Sept. 10-11 |
| Washington State College Botany Class | May 25-26 |
| Turkish Foresters (5) | Sept. 16 |
| Pole Blight Investigation Steering Committee | May 7-8 |
| Logging Slash Review for R-2, Rocky Mountain Station | Sept. 9 |
| Skyfire School | June 25-27 |
| Mount St. Michael's (Spokane) | Summer |
| White Pine Management School | Sept. 27 |
| Boy Scouts of America, Camp Cowles | Thurs. in July |

## Improvements and Maintenance

Principal jobs accomplished in maintaining the station facilities during 1957 are listed below:

Cleaned all sewage lines from cookhouse to septic tank.
Built new doors for cookhouse cellar

Repaired many broken pieces of furniture

Removed encroaching shrubs and brush

Painted cookhouse interior

Replaced many worn out pipes and traps

Painted flag pole

Repaired all loose brick on buildings

Built concrete abutement behind shop

Moved lower garage back on foundation

All transmission poles were replaced by power company

Replaced bunkhouse toilets

Cleaned out pool above water supply dam

In addition to the above tasks innumerable small jobs were necessary to improve the stations appearance and functional ability.

## Timber Sales

### Ron MacDonald, 1-4-56

This sale began during 1956 and was completed in 1957. Cutting occurred on 43 acres; final volume was 428,070 board feet. Removal of pole blight infected white pine and additional road development on the forest were primary purposes of this sale.

Following is a breakdown of material removed and values:

| | | | |
|---|---|---|---|
| White pine | 204,250 b.f. | at $2/m.b.f. | $ 408.50 |
| Western larch | 202,520 b.f. | at $3 | 607.56 |
| Western red cedar | 8,440 b.f. | at $3 | 25.32 |
| Hemlock and grand fir | 12,860 b.f. | at $2 | 25.72 |
| Totals | 428,070 | | $1067.10 |
| Plus slash receipts of $2/m.b.f. | | | 856.14 |
| Total Sale receipts | | | $1923.24 |

Approximately 1.1 miles of road were contructed by the operator

### Stanley Going

The operator removed 605 cedar posts from dead and down cedar in the NW¼ of the SW¼ of Section 27, T58N, R4W. This material had been felled by the CCC's many years ago. Cost to the operator was 1 cent per post plus 1/2 cent per post for slash disposal.

### Roy Derrick, 11-5-57

Construction of 2.8 miles of road Q2 by Forest Service equipment and crews produced 121,000 b.f. of decked right-of-way-logs. The material was offered for bids November 5, 1957 and sold to the lone bidder for a lump sum amount, $1689.45

Following is a breakdown of the materials sold:

| | | |
|---|---|---|
| Western white pine | 15 mbf | at $46.65/mbf |
| Ponderosa pine | 8 | 27.20 |
| Larch-Douglas-fir | 83 | 6.70 |
| Cedar | 6 | 3.75 |
| Hemlock-Grand fir | 6 | 2.00 |
| Lodgepole pine | 3 | 2.00 |
| Total volume | 121,000 b.f. | |
| Total value | $1689.45 | (included $1.50/mbf for slash disposal) |

This sale was completed December 1, 1957.

## Forest Roads

During 1957 a forest road inventory and future construction priority rating was prepared for the Experimental Forest and submitted to Region 1. Our goal in the forest road system development is contruction of the entire system during the next 15 years. Each non-existing road was given a priority classification.

To date 51 miles of road have been built with about 80 miles remaining to complete the system.

### 1957 Contruction

Q2-Road is about 2.8 miles on contour in Sections 23 and 24, T58N, R4W. It was built by the Forest Service to the following standards: Single lane, light service. Final cost figures show a total road cost of $15,636 or about $5,600 per mile. This is far below the sum allocated to build the road, $24,346, due to improved construction methods.

Q11-Road completion by the timber operator occurred during 1957. This road totals about 1 mile in length and is to Class E standards.

### 1957 Road Location

G. Approximately 6 miles of road were surveyed by R1 engineers to complete location of road G which extends from the termini of Q1, Section 24, T58N, R4W to road E, Section 20, T58N, R3W. It will be built to single lane, normal service design criteria, under 8 percent gradient most of its length. About 230 man-days were spent by field crews to accomplish the survey.

## Timber Management Plans

Proposed management compartments for the experimental forest were outlined in 1957.

I. Canyon Creek Natural Area

A tract of over 1000 acres already established, for the purpose of reserving from timber cutting a sample of virgin timber of the western white pine forest region for purposes of science and education.

II. Within the Benton Creek blister rust control unit.

A. A White pine Management unit devoted to the study and demonstration of intensive management of white pine in this region.

1. Within the above unit a Commercial Thinning Area of about 40 acres designed to study economic aspects of commercial thinning operations in the White Pine type.

## III. Outside the Blister Rust Control Unit

### A. Canyon Creek Management Compartments

An area of about 200 acres to test various cutting practices in the larch-Douglas-fir, western redcedar, western hemlock, grand fir stands outside Blister Rust units in order to better manage such areas in the future.

### B. Lodgepole Pine Management Unit

An area of perhaps 80 acres in which plots will be established to study the silviculture of this species which is rapidly gaining in economic importance.

### C. Pole Production Unit

A tract of about 50 acres on which a demonstration of management practices to encourage the production of western larch and western redcedar poles will aid in the management of forest lands suited to this valuable product.

Establishment of the various units outlined above should begin during 1958.

To accomplish many of the objectives for the experimental forest it is planned that vertical and oblique aerial photo coverage be obtained during 1958.